

Canadian Computer Wholesaler

THE RESELLER'S RESOURCE

Vol. 1 No. 5

A Primer on Optical Storage

- Today's Multimedia Producers
- Q&A: Pentium OverDrive
- Updated Sourcing Directory

The Latest Printers

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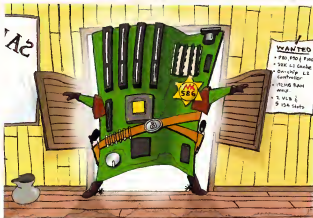
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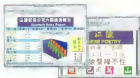
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Erasable Optical Stimulates Write-Once Applications

Malcolm R. Cooks

that 92 percent of data stored on magnetic drives is never altered.

However, even though users could have both technologies in a single unit, they had to choose between phase-change technology that provided rewritable and true WORM or magnetic-optic (MO) rewritable and opto or CCW (Continuous Composite WORM) (Figure 1).

Despite the fact a good software person could override the write-once protection of CCW media, it gained a following. To solve the shortcomings of CCW (often called square by detractors), alternative WORM was reintroduced. This technology provides true WORM capabilities by physically altering the media during the write process.

With the introduction of economical CD recorders and very inexpensive CD-R media, people are questioning whether or not WORM media will be able to compete against CDs which are lower archiving costs to produce or, nicks.

All three WORM technologies offer high-capacity, nonvolatility, durability, longevity and a low storage cost; however, there are subtle but important differences in the technologies. Organizations have to understand their storage and retrieval requirements as well as the strengths and weaknesses of the technologies to determine which option is best for their application.

Write-Once Technologies

True WORM

Today, there are four WORM options available to users. Three of these options—phase-

change, ablative and dye polymer—recently received certification that they meet ISO (International Standards Organization) 9171 specifications for true WORM media. The fourth WORM, CD-rewritable, is a viable alternative if users have a clear understanding of their requirements and the technology's limitations.

For experts stuck of 34" the polymer is anything more than "an interesting" technology, because few drives are currently available.

For uncomparing security, longevity and reliability, people are coming to realize that write-once media is the ideal solution when they must retain and protect documents, data or images from alteration or loss. To the end user, the data stored on write-once optical media appears as though it was stored on a hard disk. When a file is recalled, it can be updated and altered by writing to new sectors on the disk. When a file is deleted, it no longer appears in the directory.

The difference between ISO 9171 write-once optical solutions and standard hard disk storage methods is that write-once media is safe from accidental erasures, malicious altering, computer viruses, stray magnetic fields and other factors that can jeopardize the integrity of the data. Somewhere on the disk normally transparent to the user, every version of every file is permanently stored, including files that have been "deleted." These files are accessible as a read-only mode using special utilities that provide an audit trail.

Because of the security they provide, banks, insurance companies, health care institutions, accounting departments and government agencies are using true WORM media.

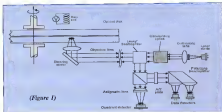
When erasable optical media was introduced a number of years ago, an industry analysts said write-once, nonvolatility (WORM) would quickly fade from the scene. WORM didn't die and erasable optical didn't quite enjoy the widespread acceptance that was anticipated.

The problem was, people had to make a decision at the onset if they wanted the security of write-once media or the convenience of rewritable media. Faced to make a choice, far too many prospective optical users made the third choice—they postponed the decision.

When multifunction optical disk drives and jukeboxes entered the market, the rewritable vs. WORM controversy was virtually laid to rest. Multifunction systems gave users a single system that accepts both write-once and erasable media. Many people, who would never have considered buying a write-once drive, have purchased multifunction drives and jukeboxes and benefit from their WORM capabilities at no extra cost.

People quickly discovered what industry studies have shown all along: it is editability—not erasability—that most applications require. For example, BIS International, an industry research firm, found that 80 percent of the data stored on magnetic tape is never erased and

COVER STORY



(Figure 1)

With the approval of ISO 9171, a number of countries in Europe have specified that government agencies must use the media in order to have their archived information considered true copies. These same agencies are specifying that they will only accept documents and data on ISO-compliant WORM media.

Data is written to phase-change disks by two methods. The first involves forming high-reflectivity bubbles on a low-reflectivity treated optical disk surface. With the second approach, the optical drive's laser system creates reflective crystalline spots on a low-reflectivity amorphous surface. Data determination of the data spot will be a 0 or 1. The writing and reading technology is similar to that used by CD-romable drives, which use a dye-polymer coating on a gold reflective layer. Both techniques are, however, read by sensing changes in reflectivity.

In the ablative approach, the drive uses a laser which makes a permanent change to spots on the recording layer of the double-sided disk. As the disk rotates (similar to a hard drive), a second, low-power laser "reads" the stored data. Variations in the reflected light caused by the pits and lands are detected and translated into computer-readable data.

The ablative WORM media also provides data integrity and security, since data can be written once and cannot be overwritten or modified. When the computer system modified or updated information, a automatically archives the most current file.

Phase-change and ablative WORM are often viewed as tamper-proof archiving. The pros and cons of write-once technology are:

WORM Pros

- With multifunction drives and playbackers, users have the flexibility of using write-once media or reusable in the same unit.
- Seek times are now as fast as 30ms making sequential retrieval a reality.
- WORM media is now available in capacities up to 1.6GB in a 5.25" size and capacities will continue to increase.
- Some WORM media is guaranteed to provide a data life of 50 plus years, making it the safest media on the market for long-term storage.
- WORM media can be written to in the same manner users write to a hard disk, sector by sector. Vendors and users prefer the con-

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COVER STORY

verses of this media for document, imaging, or output to laser disk (SCDL), medical imaging and financial/legal document storage.

- Price/performance enhancements continue to be made in the optical industry to keep pace with users' almost insatiable demand for more "on-line" storage.
- Today's multifunction systems have broad, user-proven software available to interface just-about-to virtually any operating system.

CCW or Pseudo WORM

Most Continuous Composite WORM (CCW) recording and reading techniques currently in use conform to ISO/IEC Dis 11580 and ANSI draft standard X3 230-199X. In this approach to write-once, phase encoded part (PEP) and standard format part (SFP) codes are placed into the media to permanently differentiate write-once from erasable media. The unique codes are read by optical drives so that the appropriate drive control set is invoked.

In addition to media protection, which is molded into the disk's recording layer, CCW uses a three-stage protection process, including data management pointers

CD-ROM disc



A standard CD-ROM has a layer of reflective aluminum sandwiched between a protective coating and a substrate. A dye (not shown) made into bumps is used in the aluminum.

CD-R disc

A CD-R disc is stamped with grooves to guide the writing laser, which reforms the organic dye layer. Pits are formed on the gold reflective layer. Data is read because it is highly reflective and less likely to oxidize.



(Figure 2)

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(DMF), inspection of the error code correction (ECC) sample and whole-block read with error correction.

The technology used in CCW or invertible/erasable media is a combination of magnetic and optical technologies (Figure 3). Both technologies are used to store and retrieve data.

To write to a disk, the drive must be able to change the magnetic orientation of a spot without affecting the nearby spots. This is the function of the drive's "write" laser. When the disk is magnetized, every spot on the recording layer has the same magnetic orientation—the default condition. When the drive writes to the medium, it must ensure that every spot it writes to is in the default condition. As a result, the drive must first "format" the area of the disk before writing can occur. This effectively doubles the write time, compared to true WORM or other read/write technologies.

In addition, unlike magnetic storage and other pure optical alternatives, magneto-optic drives cannot write data bit at a time. Instead, an entire track must be completely erased and then rewritten.

CCW is often called pseudo WORM because while it does provide write protection, knowledgeable software experts can modify the drive command sets. The stored information can then be erased or overwritten or the disk can be otherwise reformatted. Many see this CCW WORM approach as comparable to the write-protection tape used for floppy disk protection.

For many backup and file/image storage applications, CCW will provide adequate information protection. However, when an organization wants to know without a doubt that the information they recorded cannot be tampered with, only true write-once technologies will provide this assurance.

CD-Recordable

Since CD-recordable is similar to phase-change optical and true optical technology (Figure 3), many feel that it is an excellent low-cost alternative to WORM media. While CDs are prevalent at home and in the office (more than 3,500 CD titles are now being published) and the cost of using a CD recorder (hardware and software) has dropped dramatically, its use is often misunderstood.

CD-R is an excellent, cost-effective method for distributing limited copies of high-capacity text and digital audio files, animations and even video clips. Large volumes of information can be permanently archived on a daily or weekly basis and economically distributed to key offices throughout the state, across the country or around the globe.

Because the standards are well established, CD recorders have become very affordable and widely available. Many organizations have found it an ideal solution for producing their own CD masters or "one-off"/short-run discs in-house for a price of less than \$15 each or about \$40 per MB.

CD recording, while a relatively easy process, is not the same as writing to hard or optical disks.

The CD-R software translates and organizes the data and/or image into an ISO 9660 image for placement on the CD-R disc. A virtual image is generated by creating a file that contains the directory structure and position. Once the user is satisfied with the performance and data structure, the information is written to the CD in a single, uninterrupted pass.

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While you can carry out multiple writes on the same 650MB disc, each write session adds overhead in the form of headers and pointers, which reduces the actual storage capacity. CD-recorder manufacturers often tout 99 write-session capabilities. This is theoretically possible, however, considerable media space is eaten up by overhead and housekeeping functions, and users quickly come to realize that they should group files and limit write sessions to no more than ten. This provides storage flexibility and makes optimum use of the disc storage capacity.

Any interruption during the write process, such as a power surge or poor coding instructions, will damage the storage session and ruin the low-cost CD-R disc. Nevertheless, since the media is so inexpensive, few users are upset about throwing away a few bad discs or distributing discs that have as little as 100MB of information on them.

While CD-recordable has obvious benefits to software and multimedia publishers during their prototype development phase, general business will purchase the low-cost discs of the recorders and media to archive, back up and distribute compressed information and documentation.

It is an excellent solution for sales and marketing departments for producing and dis-

tributing catalogs and press kits. Accounting departments can provide long, detailed reviews on data so customers can directly report the information to their systems for other reports and analysis. Support organizations can provide the latest service manuals, technical bulletins and data to technicians on a single disc, rather than using binders and multiple floppies. Lawyers, and health care management as well as government agency and general business personnel can use the compact, inexpensive and reliable technology (after ensuring that they understand the limitations) for data archiving and still have data readily available.

When recordable CD was first introduced, many thought it would be ideal for COLD applications because of its low cost, ease of copying, removability and archival nature. They overlooked the fact that the CD's slow access speed often makes queries unacceptably slow. The sequential nature of CD-ROM (similar to tape) makes it unlikely that the problem can be solved for several product generations.

CD-Recording Pros

Even with its limitations, however, there are strong reasons for implementing a recordable CD program, including:

- It's inexpensive. Blank discs cost under

\$25 and can store up to 650MB.

- It's relatively fast. Users can produce a 650MB disc in about 15 minutes (using a 4X recorder).
- With multi-session recorders, users can add data to the disc until it is full and use no longer limited to one session per disc.
- CD-R media is compatible with any of the millions of CD players that are available in systems today. This is ideal if firms want to distribute multiple copies of data, images or information because, regardless of the platform, recipients can use the disc.

CD Recorder Cons

- Users need a fast computer with a very high-capacity hard disk and need to be thoroughly familiar with the mastering software.
- Pre-mastering data in preparation for recording takes time, once the recording session is started it can't be stopped. If users are producing 5 to 25 copies of the same disc, the recording time per disc is the same for each copy. There are no shortcuts. Formatting large amounts of information on the fly requires very large amounts of writable memory. If the recorder does not have sufficient caching, thermal recalculation of the hard drive will cause a problem.
- CD-ROM drives are slow. Average access time is up to 1,000ms (1 second) and the data transfer rate is only 600Kbps, even in the fastest drive.
- While multiresolution is possible, in many cases, it isn't practical since with each session users have to add format data, headers and FAT (table of contents information) which eat up storage capacity.

Reusable Multifunction

The key benefits of multiresolution optical drives and players is that, depending upon the underlying technology, they provide:

- true WORM and rewritable capabilities
 - CCW and rewritable capabilities
 - true WORM, CCW and rewritable capabilities.
- Documents with short-term value, such as draft correspondence and memos, can be temporarily stored on erasable media. Then, vital documents and reports that must be retained can be permanently archived on high-security, write-once optical disks.

MO Rewritable

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assume that the drives can read and write data with new high-capacity media as well as older-generation data cartridges. However, because drive and package manufacturers often add their own interface and implementation software, the standards do not ensure that media can be interchanged between hardware systems.

As mentioned earlier, MO media combines laser science with magnetic technology. Digital information is stored in the form of magnetic flux directions, rather than pits or bumps. Because the erasable MO disks store data in a form similar to the techniques used on hard drives, data can be erased and overwritten.

A "write" laser prepares the media and electrochroms change the magnetic orientation of the data spot. The same laser, at a lower power, reads the magnetic information. To overwrite or erase data first, the magnetic flux is reoriented in one pass. In the second pass, the erasure is verified and new data is written in the third pass.

Write-Once, Rewritable Technologies at a Glance

Technology	Description	Benefit	Drawback
Atalene	Laser burns hole in disk	Unalterable data	Limited sources
Bubble-Forming	Laser forms bubble in the media	Unaltered data	Limited sources
Dye Polymers	Laser causes reflectivity changes	Potential low media costs	Few 31/2" drives
Magneto-Optic	Laser allows magnetic field changes	Multiple rewrites, long disk life span	No true WORM, data theoretically alterable
Phase-Change	Laser beam changes disk's molecular structure	One-step overwrite for rewritable	Erase cycles currently limited to approximately 100,000

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Phase-Change Rewritable

With the phase-change direct overwrite approach, laser light converts microscopic points on the disk from a stable, amorphous state to a reflective crystalline state. The laser beam reads the difference in reflectivity between the crystalline and amorphous areas as positive or negative and encodes the information into data one bit at a time.

To overwrite information, a more powerful beam reverts the process, changing spots back to an amorphous state. Cooled reversioning, this process allows the phase-change media to switch directly from amorphous to crystalline and back again hundreds of thousands of times.

Application Issues

At first, the several million write/erase cycles offered by MO may appear to be a significant advantage over the hundreds of thousands offered by phase-change. However, one million rewrites represents one reformat cycle every 5 minutes for nearly one year. As a result, the reformat cycle performance of both technologies exceeds the demands of even the most demanding applications.

To solve the reliability questions that have been raised, quality drive manufacturers now utilize sophisticated detector circuits to realistically questionable sectors long before any problems with erase cycles are encountered.

End users are quickly learning that the ANSI/ISO standardization does not ensure either compatibility or high performance. For example, a media manufacturer may produce media that is completely compliant and still have a disk that is incompatible with other ANSI/ISO standard-sized media or custom drives. In other words, two compliant disks can use completely incompatible technologies to perform their functions.

Because of these conflicts, today's sophisticated users are more concerned with ensuring that there are multiple sources for the media and that it meets their capacity and performance needs.

Today's users are also demanding multifunction peripherals.

We already have MO drives that will carry out true WORM, CCW and rewritable functions. Since phase-change technology uses basically the same read method as CD-ROM and WORM systems, industry pundits also predict that it will be possible to build higher-capacity rewritable CD drives that use phase-change technology.

A new dual-dimensionality PBCD-ROM drive is already available that not only reads and provides direct overwrite capabilities for large-capacity, phase-change optical disks, it also reads CD-ROMs, audio CDs and photo CDs at four times the speed of standard CD-ROM readers.

Other advancements include the development of even smaller optical read/write heads so access times can continue to decrease. In addition, higher-capacity true WORM, CCW and rewritable media is being developed to meet the insatiable storage demands of users.

Rather than force WORM technology into retirement, reusable and multifunction technologies have dramatically enhanced the opportunities for write-once media. Organizations that purchase multifunction systems usually find their usability and increasing finding that most of their applications require secure, reliable storage and retrieval rather than short-term storage of information that is soon discarded. □

About the author: *Maklein & Corks is a product manager for Bell + Howell Ltd.*

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Fujitsu builds smallest MO for latest Mac PowerBooks

Fujitsu Canada announced the world's smallest magnetic optical storage device for use in Apple Computer's latest PowerBook laptops: Fujitsu's PowerBook DynaMO 230 is 17mm high, 250 gm and stores 230mb on 3.5" optical disks. It can read and write 128mb media. There is a separate connector to connect it to Apple's PowerBook Expansion Bay for use in the slot normally reserved for the floppy drive on PowerBooks 190 and 2300 series laptops. There is also an Enhanced IDE interface for connecting to PCs. It transfers up to 1 mb/sec with seek time of 67ms. Price is \$649. Fujitsu 903-602-3434.

Virtual Guitar maker changes name

Alfred makers of the Virtual Guitar peripheral is changing its name to Virtual Music Entertainment, Inc.

The popularity of the device led to the introduction of a CD-ROM Quest for Fame featuring the rock group Aerosmith. At the ES trade show in Los Angeles the next generation device - Virtual Pick or Whisk was also introduced. The VPick fits in either left or right hand and the user simply strums it against any solid surface - acoustic guitar, tabletop, broom, baseball bat, or belt buckle. The VPick senses the resistance, using internal switching technology and transmits the signal into guitar sounds that are played through the computer. SRP is US\$69. Requires Mac or multimedia PC. Virtual Music 617-271-0986.

Best of both worlds on the 'Net

ValueNet Corporation of San Francisco, CA has HyperMagix, software that automatically adjusts the appearance of a Web site to suit the browser being used. Web designers no longer have to choose between offering a Netscape Enhanced Site (which looks like pasta to a Prodigy user) or a plain vanilla Web site which doesn't catch anyone's eye.

HyperMagix works by using C code to automatically detect the browser requesting a page and then to bring HTML files to work well with that browser.

Supported browsers include: Netscape 1.x, Air Mosaic, Mosaic, AOL, Lynx and Prodigy. Browser characteristics are stored in tables which are easily configurable at the server site. ValueNet <http://www.valuenet.com/707-833-8042>

Object database for the Web

On TECHNOLOGY is releasing On Web a server development and management tool for use on the Internet's World Wide Web (WWW). Users can add to the object-oriented program to process complex and voluminous multimedia data found on the Web. It offers database features such as large capacity data storage, ability for users on different parts of the network to share data, system reliability and ease of maintenance. On TECHNOLOGY 415-842-7990.

Clariscap 2.0 ships

Clariscap's cross platform charting and diagramming program for Power Mac, Mac, Windows 3.x and Windows 95 is shipping. Canada wide. Clariscap produces organizational, flow, brainstorm, total quality management and other charts. It also does time lines, calendars and timeline graphics.

It can transfer files across platforms with ease. SRP is \$199 with upgrades from version 1 priced at \$69.

Clariscap 1-800-363-6973

NEBS updates PageMagix for DTP

NEBS Business Forms enhanced PageMagix 3.0, a Windows based DTP package. PageMagix 3.0 has a new interface, more than 170 templates, 30 new drawings and easier text handling. Also included is PagePlace which guides users through their document design. It also supports OLE 2, has 35 TrueType fonts, over 200 logos and has a feature called Clipart Browser. NEBS 1-800-461-7573. SRP is \$89.95 and it comes with 30 days technical support. A free upgrade is available to those who bought version 1 in the last 90 days.

Seeing polliwogs in VR

World Builder is using virtual reality software to simulate a 3-D model of real world work place hazards on the PC. The model is a walk-through virtual building

showing offices, conference rooms, restrooms, labs, lounges and a cafeteria. It shows pollutants that cause eye, nose, and throat irritation, headache, dizziness, nausea and respiratory, asthma, dizziness and dermatitis and other symptoms. The program is designed to reduce lost work days and cut costs to companies. World Builder 706-621-3260.

DynaTek has dual function rewritable optical/CD-ROM system

DynaTek Automation Systems Inc. announced the DynaTek PC4650, a combination 650mb rewritable optical drive and quad-speed CD-ROM drive in a single unit. The unit includes external drive, software for Windows or Mac, cables and blank disk. It comes with a 1 year warranty and toll-free support anywhere in North America. The 650mb disk costs \$80 and has a shelf life of 30 years and read/write capability of over 500,000 cycles. The laser detects whether a disk is a CD-ROM or rewritable disk and uses the right laser strength for that disk. SRP is \$1,399. DynaTek 1-800-464-8835.

Pleasant ships optical, CD-ROM system

Pleasant Data is shipping a new PIV/CD drive. It reads and writes to 650mb speed disks at a speed of 870kb/sec. CD-ROM read speed is 4x. Price is US\$895 for the internal version, US\$975 external, media is US\$49. Both units have SCSI-2 interface and work with Macs and Windows and OS/2 systems. Pleasant uses a read/write mechanism that is simpler and faster than 3-phase magnetic-optical systems. Pleasant 1-800-443-9460, Canadian distributor: Bell+Howell Ltd. 905-850-6705.

ViewSonic multimedia monitor

ViewSonic Corp. announced the ViewSonic H7EA multimedia monitor. It features resolutions of 1,024 x 768, 1,280 x 1,024 with 85Hz refresh rate, 0.28 dot pitch and linear Shadow Mask. Speakers are built-in along with on-screen controls, anti-static and anti-glare screen coatings. Available for Macs and PCs. It has a SRP of US\$395. ViewSonic 906-869-7976.

Printer Vendors Speculate on Future Trends

By Edward Tjepkema

Colour and networking are the two factors that are motivating the corporate printer market as we head into 1996. Dot matrix impact printing has truly faded, becoming a specialized product for vertical applications. While it is still not challenging laser technology in penetration, because of its efficiency with colour, inkjet is the printer maker's fastest growing segment.

Even Research Corporation (ERC) latest report on the printer market in Canada shows growth based primarily on the demand for colour output. In 1993, colour accounted for 14% of printer sales. For 1996, Bill Pounser, ERC's senior printer analyst, predicts the proportion will rise to 28.6% and he expects

colour printers to represent more than one-half of all printer shipments in 1996. Inkjet became the dominant colour technology last year with a 34.7% share. Postscript projects that inkjet will represent an even higher proportion of colour sales through 1996. High-end colour lasers with speeds greater than 12 pages per minute will show a significant growth as well. The low end laser is declining by 5% to 10% as inkjets produce better quality, higher speeds and colour.

The printer market as a whole continues to grow. Eighty-one printers are sold for every 100 PCs. APC Solutions and Technologies, printer and copy consultants, show that 50% of all printers will be attached to a network by 1996.

Here's how some of Canada's major printer companies view the trends in the marketplace:

Apple

Apple Canada Inc. has always had a significant share of the printer marketplace where Apple computers are installed. Because its distribution channels haven't encompassed the other platforms, it has lagged in the Windows and Unix world. But its latest high-end product, the Apple Colour LaserWriter 12/600 PS is a colour laser printer for workgroups composed of any combination of Apple, Windows and Unix computer systems.

(Continued on page 21)

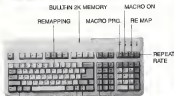
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The Latest Printers

• **Epson** recently announced the availability of the EPSON Color IIa, Stylus Color II, Stylus Pro and Stylus Pro XL color printers.

• **Epson Stylus Color IIa**, 3 color ("Photo Quality") ink jet printer, separate B/W cartridge. 360 dpi, 2.5 pages/minute. Windows compatible and fully compliant with Windows 95 Plug and Play specifications. 3 year warranty SRP \$625, street price \$499.

• **Epson Stylus Color II** plain paper 720 x 720 dpi "Photo Quality" colour ink jet. Mac and Windows compatible, also fully compliant with Windows 95 Plug and Play specifications. SRP \$609 street price \$559-599.

• **Epson Stylus Pro**, 720 x 720 dpi, letter size images with registration and crop marks, uses a piezoelectric piezhead for dots 25% smaller than original Stylus color printer. Has 100 sheet paper tray, works with Windows and Macs. SRP \$1,399.

• **Epson Stylus Pro XL**, 720 x 720 dpi 11 x 17 images with registration and crop marks, uses a piezoelectric piezhead for dots 25% smaller than original Stylus color printer. Has 100 sheet paper tray, works with Windows and Macs. SRP \$1,999 2 year warranty Contact: Epson 800-289-5776 x3000.

• **Brother HL-636** 10.5 mb RAM expandable to 2 mb, 300 dpi, 6 ppm, TN-100HL cartridge prints 3,000 pages at 5% coverage 6,000 pages. If economy mode is used, can double as Mac QuickDraw printer, drum needs replacement after 6 toners.

• **Brother HL-640** series, 600 dpi, straight paper path, 6 ppm, 2 mb RAM expandable to 10 mb, Mac compatible with AppleTalk connector, PostScript Level 2 emulation optional, 1 year warranty, consumable same as HL-630.

(Continued on page 24)

Printer Vendors Speculate on Future Trends

(Continued from page 23)

"And no large sized organizations are consolidating their print shops into a single networked printer," says Stan Osema, product manager for mid to high-end printer systems at Apple Canada.

Since most people are now using colour monitors, they want to know what they see on the screen in their output. In the past, Osema says, colour couldn't penetrate the higher end of the market because it was tricky and expensive to get colour that could be stored and still look terrific. People are more sensitive to how colour turns out than they are to black and white.

"If you have a picture of fruit, people would know if the colour of an orange was off the mark," he explains. So colour rendering has to be consistent.

With new printing techniques the cost of this accuracy has come down a lot and business productivity increases. When it was costly, organizations tended to ration the use of the colour printing, saving it mainly for external use. At a lower cost, more colour can be used internally in an organization for spreadsheets and to highlight important issues in communications.

Epson

Epson Canada Limited is also going towards colour with its large format high resolution piezoelectric inkjet printers. Even at higher resolution the Epson inkjet products are designed to be more compact and with more features at a lower cost.

"Laser printers are fading slowly and inkjets becoming more predominant for the business user," says Helene Marcus, Epson Canada Limited marketing Communications manager. "For presentations people don't care about speed. Since they are not making a great amount of copies, they care about quality."

Dot matrix remains a viable vertical market for Epson too with a need to be more versatile and faster than ever. Helene Marcus says dot matrix can never be replaced where you still need the impact on the page or print multiple part forms.

Hewlett-Packard

Ralph McMill, manager of hard copy products for Hewlett-Packard Canada Limited, differentiates between two types of printer networks. At the local area network level, desktop printers don't need the high volume

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The Latest Printers

(Continued from page 35)

• **Brother HL-1200** series features 1200 dpi, straight paper path, 500 sheet paper tray • 100 sheet multi-purpose tray, 12 ppm, uses HP4 toner cartridge (EP-ED). Mac compatible with adapter card from 3rd party, optional duplexing, 2.0 mb RAM expandable to 25 mb with standard 72 pin SIMMs, 6 mb RAM required for 600 dpi PostScript output, Adobe Level 2 emulation, 20 MHz RISC processor, uses APT (advanced photoscale technology) to enhance photos and HRC (high resolution control) to get test resolutions of 2400 x 600 dpi, has ROMGA slot for flash RAM or HD 2 year warranty, 6,000 pages @ 5% coverage from 1 toner cartridge or 13,000 pages using economy mode. Brother International Corp. (Canada), (514) 335-3330

• **Lexmark Optra LX 1200 dpi**, 10 ppm, 300 dpi or 600 dpi prints at 12 ppm while 1200 dpi outputs at 8 ppm. SRP \$2,999 with 4 mb RAM and 500 page per PostScript Level 2 and enhanced PCL 5 emulation. Hard drive and duplexing option, upgrades to 32 mb RAM. SmartSwitch senses PostScript or PCL and switches automatically. Gamutjet prints 7,000 pages at 5% coverage, duty cycle rated for 75,000 pages per month. One year warranty

• **Lexmark WinWriter 1600** has both color and B/W cartridges on hand so no swapping is required, true blacks not mixed inks, 2-4 minutes for color output, 5 ppm black draft mode, 2 ppm black letter quality mode, 600 x 300 dpi, handles letter, legal, envelopes, labels and custom pages (3" x 5" to 9" x 14.33" width x height), 150 sheet input tray, 15 envelope capacity Energy Star compliant, ink-saver mode 437 x 288 x 287 mm or 17.2" w x 10.6" d x 11.7" h, 9.75 lbs (4.4 kg). Consumables, B/W 1,000 pages @ 5% coverage, color 250 pages @ 10%. Two year warranty. Street price @ \$629 series with Corel Draw 3 CD-ROM. Cost per page in color averages 37 cents and 4 cents in B/W.

• **Lexmark Medley** is a color printer, plan paper fax, scanner and copier all-in-one. Color inkjet printer, B/W's open, takes 2.5 to 7 minutes to print in color, 600 x 300 dpi with PGET in B/W, 300 x 300 in color, outputs 16 million colors or 256 grey scales, 160 sheet paper, handles legal, letter, envelopes, transparencies, labels, stickers, index cards, 12 TrueType and 2 DOS fonts. Scanner rated at 6 ppm, 300 x 300 dpi, 256 grey scale. Plan Paper fax has handset, autodocument feeder has 20 pages, 6 ppm, 14.4 kbps transmission, send resolution super fine is 300 x 300, fine is 300 x 196 and standard is 300 x 98 dpi, 84 speed dial numbers, 14 one touch functions. Fax has 60 page memory should ink run dry or paper run out and it is expandable to 255 pages. Memory allows other functions to work when fax is incoming. Auto latch switch built in Medley 4x and 4cc have handsets. FAX/mgr software and multitasking OS firmware allows user to view/fax documents, receive fax PC send from PC, multiple phone books and remote status reports. Copier copies at 2 ppm, 300 x 300 dpi at 64 grey levels, 99 copies, contrast control, 1 year warranty, black ink cartridge has life of 1,000 pages at 5% coverage, color cartridge has life of 200 pages at 10% coverage. SRP for Medley 4cc is \$1,599, street price is \$1,479 and it comes with color and B/W cartridges, handset and battery backup to keep faxes in memory should power go down. Medley 4x SRP \$1,538, street \$1,399, has B/W and color cartridges and Medley 4x SRP \$1,538, street \$1,399 comes with handset. Cost per page is 3 cents in B/W and 15 cents in color. Contact: Lexmark 800-326-5533

• **Ektrex Prover 340**, 32 MHz RISC processor, 4 ppm, full color, uses plan paper low cost about 4 cents for B/W and US 16 for color, uses easy and clean to replace solid ink sticks good for about 3,000 pages, 600 x 300 Adobe PostScript Level 2, with options Ethernet, token ring, LocalTalk/Serial, supports Macs, PCs, UNIX, under OS/2, 195, EnergyStar compliant. Contact: 800-806-6660

(Continued on page 35)

printing capacities of departmental network printers. These smaller workgroups are looking for faster print speed along with network connectivity capabilities but at a low cost.

Just as colour migrated from the small office, home office (SOHO) to the corporate level, he sees multi-functional equipment moving up the sectors. But the multi-functional printer at the corporate level is going to be more than a printer, medium/large machine, photocopier and scanner. He sees it incorporating all the capabilities that come from being on a network, including distribution and storage.

"Using the network was at the backbone of the system, the printer becomes the logical integrator of intelligent devices on the network," he says. "We call this recipient printing. It allows the receiver to print, store, and edit documents as they need to."

Printers and networks will integrate through the printer software so the user can choose which process to send the job to on the network. The printer becomes a quasi-mail system with the sender sending the document directly to the recipient's printer. These printer networks are inexpensive so there is no need for codes or knowledge of paths.

Colour is still emerging, McNeil sees Corporations are starting to invest in the hardware, but they are still sitting through the strategic of how to implement colour. Certain parts of the organization, specifically sales and marketing are moving towards colour quite rapidly, while others are moving more tentatively.

"Colour is becoming the expectation rather than the exception," he says.

McNeil thinks inkjet printers will be the driving force that makes colour pervasive in corporate environments. While laser has its benefits, inkjet gives colour at a better price. He believes inkjet will move to the higher end and produce that within a very few months even professional design and printing concerns and computer aided drawing will use inkjet.

"Having a device that can do large format printing with photo realism capability is really exciting for them," he says. "There will be tremendous opportunity for resellers working with Hewlett-Packard and its customers to provide solutions and consulting to assist the technology never existed before."

(Continued on page 35)

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Printer Vendors Speculate on Future Trends

(Continued from page 27)

Lexmark

Steady Corlett, vice president, printer marketing, Lexmark Canada Inc. also views the attaching of printers to the network as the overriding trend in his industry. Speed and print quality will still be driving forces but he thinks manufacturers will have to start building network management tools directly into the printers to meet the new market demands.

The competition from inkjet technology where colour basically comes free is also driving down the cost of colour on laser printers. Some executive corporate users, while they do the bulk of their printing on the network, will want a personal printer in their office for colour occasions. "We call this the executive market."

Lexmark's newest product is a high-end network colour laser with continuous tone that gives near photographic quality at a price close to \$18,000. So, for individual users doing departmental productions, the indulgence of a \$600 inkjet doesn't seem out of hand. "It's the first trend we have seen driven from the home rather than the other way around," Corlett says.

The shipping costs to the market he sees for dot matrix. Bills of lading, inventory control turnaround documents that must come back with a signature are all applications that lend themselves to a dot matrix printer. The Lexmark heavy-duty dot matrix printers are designed to operate in this stand-alone environment.

Xerox

A lot of what people used to do on their copiers, Xerox Canada has determined they are now doing on their laser printers. They also feared that if there was more opportunity, corporate Canada would do even more on the printer. To meet the challenge Xerox is adding finishing and paper handling options, like the ability to collate and staple copies, to its new X family of high-end printers.

Jocelyn Eisenberg, desktop printers marketing manager for Xerox Canada, cautions readers to prepare for the explosive growth in the colour laser market.

"I am going to expect it to when desktop publishing becomes an important element," she says. "You're vying for everybody's attention. Everybody's trying to sell something, even if it's my proposal's better than your proposal."

People taking their work home to complete it on their home computers and print it is colour or the inkjet was colour capability when they came back to the office. Price is also encouraging, colour in 1994 the average price of a colour laser printer was \$40,000 or \$20,000. With a range of colour laser products now at between \$7000 and \$12,000 it is a lot more affordable. "It's no longer one per corporation," Jocelyn Eisenberg says.

Reven

Stuart Pearson, sales and marketing coordinator for Canadian owned Reven. Printers, well known for its early dot matrix printers, is observing a decentralization in the printing process. With Windows for

(Continued on page 32)

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EPSON

The Latest Printers

(Continued from page 35)

• **Canon BJ-360** small size printer (300 x 157.8 x 57 mm), two line print capability gives it a 277 cps at 3.5 ppm speed. 360 x 360 dpi can be smoothed to 720 x 360, has 4 print modes - fine, high quality, normal and economy. SRP \$443.

• **Canon BJC-70** uses two ink tanks, one for BW and the other for color, new quick-drying non-toxic inks have bright colors and rich blacks with better resistance to fading and moisture. Wide carriage prints two lines at a time. The BJC-70 can print on envelopes, transparencies, backpack film and high gloss film, auto feeder holds 30 sheets and a paper thickness detector eliminated the need for a paper selection lever. Has universal power adapter for worldwide use, rechargeable nickel metal hydride battery for up to 100 pages SRP \$599, weighs 1.4 kg, measures 300 x 157.8 x 57 mm.

Contact: Canon Canada (905) 795-2034

• **QMS magicolor CX** laser printer, is a 600 x 600 dpi color laser that can print in color at 3-8 ppm and 12 ppm in BW. It is networkable with Ethernet or Token Ring connectors to NetWare, TCP/IP, EtherTalk and Lembit/LanServer, there is QMS ColorSmooth which uses frequency modulation screening for accurate colors and smooth edges and QMS GCOLOR color management tools for automatic or custom color control, it has a \$1,499 option to turn it into color copier that does not require host computer to operate, the option has a scanner that plugs into the SCSI port on the printer. Also available is a sheet feeder for \$799 and transparency unit for \$699. The magicolor CX comes with 32 mb RAM expandable to 64 mb plus internal HD, it has 30 PostScript fonts, 20 PCL fonts. SRP for the magicolor is US\$7,899. The CX is for high end photo-realistic output. Less expensive color printer is available in the LX which comes with 12 mb RAM for 600 x 600 BW output or 300 x 300 color, another 12 mb RAM will

give 600 x 600 color output SRP is US\$4,999. Contact: QMS (800-623-2666)

• **Hewlett LB-8** 1200 dpi when used in Windows mode with edge enhancement technology and photo enhancement technology, supports client/server operations, under Windows for Networks 3.11, 4 ppm, bi-directional parallel port provides print status to Windows users, toner saving mode, has RAM compression which can print full page PCL4 pictures with 512 kb of RAM, Energy Star compliant 5" wide footprint, has reliable toner process unit, toner ROP-450 has life of 2,000 pages at 4% coverage, process unit ROP-EP5 has life of 15,000 pages. Contact: Serviceworks/Distributions (604) 273-4455

• **Geniplex 7613** SRP \$3,415 street \$1950, uses HP41 toner cartridge, 12 ppm-600 dpi with HRC (high resolution control) 2 mb RAM expandable to 38 mb, 150 sheet multi-purpose paper tray, 500 sheet recycled paper tray, duty cycle 20,000 pages/month, takes PCMCIA II cards, auto port and emulation switching for networking, emulates Adobe PostScript Level 3, Epson FX-850, HP PCL5e (LaserJet 4), HP-GI, Uses HP LJ4 toner (EP-6) Energy Star compliant and Hewlett IBM TXUC cards. Contact: Geniplex Canada (905) 862-2500

• **HP LaserJet SL** SRP \$855, 600 x 600 dpi, uses HP's new PostScript set of technologies designed to give Windows users advanced features which save time with quicker print speeds, uses no wait laser technology to get page out in first 20 seconds and can print faster than rated engine speed, cost page is less than 2 cents and EconoMode brings it down to 1 cent by conserving tones, has 4,000 page monthly duty cycle, sets up out of the box in about 15 minutes, one button operation, on-screen help and print status monitor plug and play compatible with Windows 95, Energy Star certified. Hewlett-Packard 800-337-3887

Printer Vendors Speculate on Future Trends

(Continued from page 35)

Workgroups and Windows 95 there is a trend to sharing among fewer people, rather than many users all accessing a large format, high speed network printer. The new line of Raven printers promotes this trend and follows that market. Stuart Pearson also sees more personal printers in corporate use.

"People love colour and really want to make colour presentations," Pearson says. While he agrees inkjet offers the best colour for the cost, he is looking ahead to what he calls the next generation of colour printer—dye sublimation. He thinks the output of dye sublimation will be closer to photo realism.

He thinks the next year or two will be a turning point away from inkjet. "The cost per page is a huge factor in corporations and we believe dot matrix and laser are a lot cheaper to run than inkjet," Stuart Pearson says.

Recent still finds a market for in-die name products, but a different one. Its wide carriage products do well where economies of scale, in the printing of invoices, running reports, and labels, warrant heavy usage.

Brother

Pottery Development, national sales director, printer products group for Brother International Corp. (Canada) Ltd. says, "there is no doubt that the most attractive and professional looking documents are printed on laser printers, and the desire from users for this type of output will always be demanded." Thus leaving us with the challenge of developing this technology faster, easier, even more attractive and needless to say, cost efficient. The demand for laser printer technology will be the greater since these challenges have been delivered and will increase in popularity in the coming years. Therefore users will soon enjoy even greater versatility in laser printer and the selection for a printer will not be as difficult as it is today. The question for users remains - will it be ink jet or laser? □

About the author: Edward Trepowski is a freelance writer living in Toronto, Ont.

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Distributor of POS systems and drivers, customer display, keyboards, dot matrix and thermal printers, bar code and card readers in the POS market across Canada. *Brand-agnostic.*

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U.S. Information Systems

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 Tel: (604) 688-4554 / 343-0386

Distributor of a complete line of Chinese and Japanese systems: PC and Mac word processors, English-Chinese translators, English-Chinese/Japanese dictionaries, language tutors and Chinese CD-ROM titles.

BDCA Research Inc.

377 Brunswick, P.O. Box 335, Etobicoke & Eglinton
 St. W. #5C 3/5
 Tel: (416) 410-2555 Fax: (416) 410-1992

The company's products enhance the performance and increase the functionality of personal computers. They enable personal computers to be linked through business networks and share hardware, databases and software.

Brother International Corp.

1 East First St. Suite 215, Richmond B.C. V6V 2B4
 Tel: (604) 271-8444
 Tel: (714) 437-3600 Fax: (714) 437-0761

A supplier of ink jet and laser printers, fax machines, portable and office copiers, word processors and labelling systems. The company's products are sold under name.

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A distributor of 3M's Express Systems Series Software used in industrial automation point-of-sale, financial value transaction processing and communications.

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Brand-agnostic.
Hamtron, Inc. Tel: (604) 228-8476 Fax: (604) 228-8334
Toscan, Inc. Tel: (604) 798-0334 Fax: (604) 477-9376

C

Canadian Memory Products Ltd.

Suite 250 1551 Stebbings Way, Richmond B.C. V6X 2P7
 Tel: (604) 279-5547 Fax: (604) 279-5624

Supplier of high quality memory modules for all types of computer's last generation microbus and laptop. The only New Guardband Distributor specializing in Memory Upgrade Products. Canadian Memory Products is now serving over 3000 clients.

Canbell Group Enterprises Inc.

129-11601 Maynard Way, Richmond B.C.
 Tel: (604) 274-1884 Fax: (604) 279-2347

A national distributor/wholesaler of power supplies, transformers and office supplies products include power box,

power control units, keyboard, cable, data switch, gender changer, SCSI/IDE converter, modular disk lock, disk floppy lock, mouse, mouse holder, copy holder, keyboard answer printer stand, wire and pad, monitor arm, screen filter, cleaning kit, computer disk, hard disk, mouse, mouse and CD reader/writer accessories.

Canon Canada Inc.

4780 Deerfield Millington, Ont. L7T 1P7
 Tel: (905) 263-1127

Tel: (905) 263-1111 Fax: (905) 263-0014

A member of information systems products in desktop and desktop series Canada. Products include bubble jet, color bubble jet and laser printers, image monitors, multifunction PC/printers/notebook, PC with built-in bubble jet printer.

Centa Technologies Inc.

11 Ems Park Dr., Unit 7, Markham, Ont. L3R 3J1
 Tel: (905) 513-0943 Fax: (905) 513-0644

A national distributor of PROCOMM computer communication supplies, multi-media and networking products.

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 Tel: (905) 474-4944

CIMSYS provides software for sales force automation by using the Access+Plus customer management system. The software integrates database management, word processing, electronic fax, e-mail, mail merge, bubble jet, word processing, scheduling and inventory into one windows software package. Full service data management is available through the Access Scanline Feature.

Clarix Canada, Inc.

3 Clarend St., Ste. #63, Toronto, Ont. M5T 1A9
 Tel: (416) 541-6175

Clarix is showing ClarixWorks 4.0 for Windows, the software product for business, home and education users that integrates word processing, spreadsheets, database presentation and drawing functions into one application. The Maker Plus, an software database system for both Mac and Windows users is also available. ClarixWORK for Windows, a streamlined alternative for graphics is also featured.

Classic Software Systems Inc.

Unit 825 3845 Steeles East Drive
 Oakville, Ont. L4J 7C1

Tel: (905) 239-3379
 Tel: (905) 239-5147 Fax: (905) 239-5094

BR: (905) 239-2347

Classic Software Systems Inc. is a national distributor of POS communication software, supply/distribution, hardware and peripherals to desktop users in retail.

CompCase Systems Inc.

200-2540 Mississauga, Mississauga B.C. M7T 1C7
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Distributor of radiological software and computer systems.

Computer Plug Accessories

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One of the Canada's largest importer and distributor of modular computer cables and computer accessories. Retail stores include TechCrab, SuperMac and Tech Line.

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1400 Steeles, Mississauga, Ont. L4T 4G7
 Tel: (416) 232-1880 Fax: (416) 232-2222

Computer Accessories Plus is Canada's leading distributor of computer accessories and multimedia products with over 600 different computer & electronic accessories such as microfloppy diskettes, plastic storage boxes and electronic music synthesizers, etc.

Computer Associates Canada Ltd.

3337 Airport Rd., Mississauga, Ont. L4V 1R3
 Tel: (905) 275-0300

Desktop/multimedia client/server software is available from Computer Associates.

Computer Clearance Warehouse

250 Kingston, Thornhill B.C.
 Tel: (904) 479-7776

Computer Clearance Warehouse buys and sells used and surplus computers, parts, supplies, accessories.

Contex Micro Systems Inc.

11770 McMillan Dr. Suite 100, Richmond B.C. V6V 2C7
 Tel: (604) 272-6668 Fax: (604) 279-3191

A manufacturer and distributor of computer systems and peripherals serving all of Canada. Server systems are located in Western Canada.

Brand-agnostic.

Colony, A.R. Tel: (603) 254-3345 Fax: (603) 254-6092

Electronic Computer Centre

80 Bessie St., Markham, Ont. L3R 5B7
 Tel: (905) 475-4356

Electronic Computer is a distributor of brand name and OEM computer systems, peripherals and components. The company specializes in networking hardware and software from companies such as Axxess, Centrix, Software, Emerson, Explorer by Intel, Image, Intel, and Sun Microsystems. The Explorer notebooks and new Explorer Peripherals. E multi-media notebooks are available.

Constar Peripherals

50 Birchmount Rd., Suite 401
 Mississauga, Ont. L4T 1C2

Tel: (905) 279-3344 Fax: (905) 279-3944

Formed in 1986, the company sells, designs and builds a comprehensive line of information storage solutions products, including disk drives, tape drives, storage management software and disk array storage systems.

D

D-Link Canada

2185 Chimes Dr., Mississauga, Ont. L5L 1M9
 Tel: (905) 274-4172

D-Link, a US 5000 manufacturer of networking and interconnecting solutions provides Ethernet networking FDDI, Token Ring, ATM, and SCSI hardware.

Deewoo Electronics Canada Ltd.

179 Ames Rd., Markham, Ont. L3R 4C3
 Tel: (905) 475-2298 Fax: (905) 471-7247

A leading manufacturer of computer monitors and consumer electronic products. Products have high performance quality monitors ranging from 14 to 21 inches.

sourcing directory

Data Distribution Inc.

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A national distributor of motherboards, add-on cards, floppy disk drives, and monitors serving Ontario and western Canada.

Branch Office:

Windsor, Ont. Tel: (416) 493-2878 Fax: (416) 493-2761
Mississauga, Ont. Tel: (905) 236-6761 Fax: (905) 236-6762

Daytek Electronics Corp.

3600 Jerome Road, Troy Hills, Richmond, B.C. V6V 3Y4
Tel: (604) 276-3333 Fax: (604) 276-3332

A subsidiary of Garmin Corp. Its main business is selling computer monitors manufactured in South Korea, drives in desktop, VME channels and system integrators. Products range from 14-inch to 20-inch and from 16VGA with digital controls, low radiation HP 82 and line art laser computer.

DATACODE InfoSystems

267 11888 Cedar Road, Richmond, B.C. V6V 2K7
Tel: (604) 274-1184 Fax: (604) 278-9332
Tel Fax: 1-800-341-5554

Data InfoSystems is a CD-ROM manufacturer distributor of software for PCs and Macs.

Digital Equipment of Canada Ltd.

4115 King St. W., Willowdale, ON M2P 3C7
Tel: (416) 734-7600

Digital's Internet-ready Alpha Server combines the 44-bit RISC performance of Alpha and the strength of Digital VMS. Its Net/Server, Gateway, and the ProServer Plus are also available. Networking products include DECshare 5000, DECshare Family of 7000 and 4000, RascalNet, NetWare, and NetWare products, and MultiWare network management and management software. ProServer includes MultiMedia Publisher, MPED, Multi-server client desktop.

Dynastek Automation Systems Inc.

200 Blawiey Rd., Bedford, NS B4B 1G5
Tel: (902) 402-5000

Dynastek Automation Systems manufactures and distributes SMD, hard disk tape, removable hard disk tape, tape optical, and CD-ROM data storage products.

E

EMU Data Systems Ltd.

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Calgary, Alta. Tel: (403) 276-1147 Fax: (403) 276-1177
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Windsor, Ont. Tel: (519) 944-2001 Fax: (519) 944-2002

EMPAC Computer Corp.

714 Second Street, Markham, Ontario, L3R 9Y9
Tel: (905) 940-8880 Fax: (905) 940-8889

Empac is a national distributor and manufacturer of computer systems and peripherals. Empac's total effect is

located in Markham, Ontario, with regional offices located in Vancouver and Montreal. Empac distributes a wide selection of low-cost computer products. Products line includes the complete line of IBMPC and CP/PCs, Macintosh, and CICA, HP/PE, manufacturers, Message and Solution solutions, Quantum tape drives, American Power Conversion UPS, Seagate hard drives, tape heads and printers, Panasonic, TQAC CD-ROMs and floppy drives, (Exclusive) peripheral cards, (Exclusive) computer cases and multimedia products. In addition, Empac also carries many other brand names.

Branch Office:

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Richmond, B.C. Tel: (604) 911-0177 Fax: (604) 911-0077

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A wholly-owned subsidiary of Epson America, which is a worldwide affiliate of Seiko Epson Corporation, a global manufacturer of computers, printers, releases, LCDs, watches and other high technology consumer products. Epson's line of printer products provide complete imaging solutions at the personal and network levels. A national imaging products company specializing in the distribution

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F

Fatech Computer Ltd.

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A distributor of high performance PCs, computer parts for the PC and Macintosh platforms, multimedia products, and specialty screen filters. Also provides leading edge multimedia technology including MPEG encoding and playback systems, microcomputers, CD-ROMs, video capture and communication systems.

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Region Canada distributors represent products including electronic imaging systems, dot matrix and laser quality printers, hard disks, Minolta MD lenses, floppy drives, and keyboards.

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3. Client-side open systems and computer jargon in desktop: Mail-Mark covers leading computer platforms such as Digital Equipment, Hewlett-Packard and IBM. General as well as main storage, networking, communications and peripheral devices.

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[illegible]

ent HP Vector PCs (Architects, 386/486 and 685 networking configurations). OmniBook PCs and HP 3000s and 1000s palm-top PCs. Products are available for the oil, gas and engineering fields.

DOI: 10.1002/9781118466356.ch10

Year (1988)	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020

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Table 1

TABLE 1. *Continued*

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Hologic's software innovation peripherals include ROM and CD-ROMs (either non-stored data storage products or interactive slides), optical disk drives, optical libraries, and optical journals. CD-ROM drives are Hologic's Encinitas Imaging System, Harbor Network Storage Management System, and new generation RGB Modules are also available.

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- Monthly Employee Summary



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Other

- Automatic Payroll Summary
- Print Payroll List



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 Fax: (604) 682-2889

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 Richmond Hill, Ontario L4B 1P2
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sourcing directory

IBM Canada Ltd.

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IBM provides hardware from PCs to mainframe software from operating systems to applications solutions, technology from components to complete systems, and services including software support, education, consulting and maintenance.

Impeq Technology Inc.

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3-8/90 1-800-413-8352

Discounters of standard PC's, notebooks and desktop peripherals and software. Impeq serves all of Canada with toll-free phone service and next day delivery in regions. Hardware line includes Pentium and 486/386/100 "name-brand" PCs, PC/KBs and parallel port add-on (internal) keyboards, CD-ROM drives, super floppy hard drives, floppy drives SCSI and network adapters, Modems, Video, Audio Capture, Networking, Printer Sharing, CPU Memory, Fax/Modem and Voice/Fax modems.

Ingram Micro Inc. (Canada)

220 Beaver Creek, Mississauga, Ont. M5E 2E1
Tel: (905) 749-5400 Fax: (905) 749-4136

Canadian microcomputer distributor that markets and distributes more than 30,000 products from more than 40 of the world's top hardware manufacturers and software publishers. Ingram is a worldwide distributor to more than 7,000 Canadian dealers, resellers and VARs. Ingram Micro Inc. (Canada) is a subsidiary of Ingram Micro Inc. (United States).

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386 Microcomputers

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L

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sourcing directory

books. Lapras also carries following products: NVR cases, three cases Creative Labs A1, T-shirt Cases Lapras, three cases, Screen keyboards, Remtek, Power Lapras, Monitor, GABARTE, Dyna, Epsilon, Western Digital, Seagate, NEC, Onkyo, etc.

Laser Publishing Group

34 (516) 239-6339 Fax: (516) 232-4740

Publisher and distributor of entertainment and educational CD-ROM titles.

LCH Resources Inc.

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Tel: (905) 279-4394

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A national distributor of high quality GIGABYTE motherboards, add-on cards and computer systems.

Lozmark Canada Inc.

140 Royal Oak Ct., Markham, ON L3R 9V7
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M

Meckle Enterprises Ltd.

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A distributor of multimedia speakers. Stereo keyboards, USB KEY keyboards, Sega keyboards, JABA power supplies, monitors, GIGABYTE motherboards, 640GB case, R-SOL/IDE HD, removable disk and accessories.

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Megabyte is a data communications manufacturer for mobile computer products.

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 Tel. (604) 273-3682 Fax. (604) 276-6379

A PC manufacturer based in Richmond, B.C. with branches in Calgary, Edmonton, Toronto and Montreal. With an ever-expanding department and an automated assembly line in its B.C. head office. Seaska is the manufacturer of 486 9000 PCs and also offers PCs, hard drives, monitors and other peripherals on an OEM basis.

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SPEC Research Inc.

1850 Bedford Circle, Dryden, Ontario, CA E7A 4E4

Tel. (514) 814-8331 Fax. (514) 814-8882

Spec Research Inc. is a prime source of input devices in the computer market. As a keyboard specialist, they are the largest importer and distributor for the most popular keyboard manufacturers including: Cherry, F-keys, Keyboards, and Alps. They are also a major supplier of peripherals and accessories like: ZENON mouse, CPU cooling fan, and their own Green PC series products.

Branch Office

North York Tel. (416) 449-8189 Fax. (416) 449-9781

StarTech Computer Products

200 Paradyke St. Unit D13, London, Ontario N6A 1M2

Tel. (519) 438-0585 Fax. (519) 438-6339

800 (519) 438-0288

Internet: starstech.mktg@starstech.com

StarTech Computer Products is a manufacturer/distributor serving Canadian customers. The company specializes in LAN, Adapters, Network Print Servers, Peripheral Sharing Devices, and all types of computer cables. Also available are StarView Server allowing multiple CPU's to share 1 monitor, keyboard and mouse. StarTech has Canada's largest selection of specialty cables and manufacturers all kinds of custom cables.

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Supertone

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Supplier of computer hardware products to the retail market across Canada. From offices and warehouses in Vancouver and Toronto, it distributes a wide selection of local name products. From computer systems to peripherals and components.

Branch office

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T

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Tel. 1-800-267-0799 (416 area)
B.C. Tel. 1-800-643-0960

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A manufacturer of electronic measurement equipment, video systems (base form) and color printing technology devices.

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Tel. (604) 279-0996 Fax. (604) 279-2649

TVM is a "Value based" marketing manufacturer producing monitor sets from 14 to 28 inches with resolutions ranging from 1 000x1000 to 1 000x1 200.

U

Ultimet Computer Corp.

The Ultimate Edge, 600 Bridgeway Ave., Toronto, Ont. M6H 1Z9
Tel. (416) 226-2000 Fax. (416) 226-1400

Ultimet is a notebook distributor. They offer the latest Pentium 4 440000 notebooks including built-in CD-ROMs. They also supply a full line of 386/486 systems as well as computers such as notebooks, video cards, memory and CPUs.

UNIVELL Microsystems Inc.

8007 380 Jervis Road, Richmond, B.C. V6V 1B6
Tel. (604) 276-7900 Fax. (604) 276-9627

A national distributor of computer systems, monitors, motherboards, add-on cards, hard drives etc.

V

ViewBonic Canada

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Vision Masters Multimedia specializes in the design and production of computer graphics on print form and CD-ROM.

Vltech Computer Systems Inc.

480 West Road, Unit 1, Mission, Ont. L2M 4Z0
Tel. (905) 477-2434 Fax. (905) 449-2418

Vltech Computer Systems is a Canadian owned and operated PC manufacturer and distributor. The company is the exclusive distributor of Vtech, Laser and LaserJet computer.

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WAVEFORM Technologies Inc.

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Wes-Micro Electronics Inc.

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Tel. (604) 279-1000 Fax. (604) 279-1007

Wes-Micro is a well-established computer hardware in Richmond. Its product line includes monitors, motherboards, hard drives, memory chips, video cards, software cards and multimedia products.

Western Digital Canada Corp.

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Branch office:

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Tel. 1-800-673-3000

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MS OFFICE: This Suite Smells of Success

By Alan Zisman

Windows 95 is nice, but while it does a pretty good job of running the current generation of applications, it really needs new applications to take advantage of all its improvements. It really shouldn't come as much of a surprise, therefore, that Microsoft is reworking virtually its entire product line to run as native, Win95 applications.

The flagship of Microsoft's armada is the MS Office suite—it should come as no surprise that MS Office 95 was released on August 24th—the same day as Windows 95 itself—might as well give everyone in these long lines something else to buy! (well—nearly ready. The update to Access, the database included in the Office Professional package, isn't quite out of beta-testing yet. Instead, purchasers of the Pro package get the Access 2.0, with a coupon for a free upgrade when the Win95 version is ready.)

In the past few years, software suites have become big business—accounting for the majority of sales in word processors and spreadsheets, for example. Despite competition from Lotus SmartSuite and Novell (formerly Word Perfect) Perfect Office, MS Office has garnered over 70% of suite sales. Where in the former DOS world, Microsoft seemed to always have the also-ran contender in word processor and spreadsheet sales, the combination of Windows and suite has pushed them into a comfortable sales lead.

Take Advantage Of Windows 95

Many of the improvements that Office-95 users will like best aren't really improvements to Office—they are common to any programs designed for Win95. Users quickly learn to enjoy long file

names, for example—something that Mac-users have appreciated for a decade. No more Q3-9584/D.DOC to identify that "3rd Quarter 1995 Budget" word processing file (But Win95 automatically creates a standard DOS 8+3 file name as well, so the file can be used as computers or with software that's not up to long filenames yet.)

All Win95 applications must be written as 32-bit software, rather than the 16-bit versions standard with Windows 3.x. This doesn't automatically make them run faster. The 32-bit Windows NT versions of MS Word and Excel, for example, ran slower than their 16-bit equivalents, because they left out the highly-optimized programming code of the older versions in order to be compatible with NT on a wide range of CPUs.

The newer Win95 versions of these programs, however, do feel snappier than the last generation. And, as 32-bit programs, Windows 95 will run them in separate multitasked sessions—making them harder to crash by some other misbehaving program. These are big programs, however, and while they'll run (at least one at a time) on 8 meg machines, you might want to consider upgrading to 16 megs if you're going to run them regularly, especially if you need to run several at once.

Win95 allows new programs to be multitasked—to run separate processes in the background to improve performance. The Of-

fice applications don't make much use of multitasking, however, adding it only to printing.

A nice Win95 feature that may take getting used to is "Snaps"—you can now highlight part of a document, and drag it to the desktop, where the snap can sit and wait for you to drag it into a different document or even a different application. Use it, for instance, to drag an address from a letter, and drop it into a contact list... but like the other features, only available with Win95-compatible applications, like all of Office 95. Similarly, right-clicking on the desktop gets you the standard Win95 pop-up menu—choose New to simply create a new Word or Excel or Powerpoint document. In fact, as with Win95 in general, right-mouse clicking is implemented throughout Office 95.

Office 95 applications also all make use of Win 95's Exchange client—you can send e-mail from any of them, or use it to share information across a network. You can also use Word to edit your Exchange e-mail. (Help items in all the applications can automatically connect you to the correct forum on the Microsoft Network (if you have registered for an account).)

Working Together

Suites have been marketed as a bargain—a way to get three or four applications for the price of two. Office continues in this tradition, as before, bundling MS Word word processor, Excel spreadsheet, and Powerpoint presentation graphics (plus the Access database in the Pro version) Schedule Plus, a group scheduler and personal information manager that debuted in

MS Office 95

is better than previous versions

— Microsoft's programmers worked on using as much common code for all of the applications.

Windows for Workgroups has been moved from the core Windows package into Office (WFWG users can get a free upgrade of Schedule + from Microsoft).

As well, suite marketing has claimed that purchasers would find it easier working with a collection of applications that sported the same interface. Unfortunately, reality has not always lived up to this—the applications found in suites may come in one box, but have tended to leave more than a little to be desired in terms of working together.

Office 95 is better than previous versions in that way—Microsoft's programmers worked on using as much common code for all of the applications they share File Open and Save dialog boxes, for example, enhancing Word95's standard dialogues with features of the selected files and integrated search. While users of Word 6.0 could run AutoCorrect, now that feature appears across the Office, as does a new help extension, the Answer Wizard. A nice touch is the vertical scrollbars—you can now see what page number you're scrolling to. Common spell checking dictionaries, including user-customized dictionaries.

You can open those applications from Word95's Start Menu, but by default, you get the Microsoft Office Shortcut Bar, replacing the previous version's arcane Microsoft Office manager (MOM). The Shortcut Bar (sorry, no cute acronym) floats on the desktop, or can be anchored to an edge of the screen, and you can add any Word95 shortcut to it, just dropping it onto the Shortcut Bar—making it an easy way to access any of your favorite applications, whether its part of Office or not. You can have multiple Shortcut toolbars—it's configurable enough that some users may find a preferable to Word95's Start Menu for most of their computing.

In addition, Office adds a new kind of document—a Binder file. This lets you combine data from any of the Office apps, or other Office-compatible software into a single, notebook-like setting—as easy as dragging them

in. You can number pages, or check spelling, as if this was a single file, regardless of the source of the data—a step in the direction of working with documents that fit your data, without having to start off with single applications. Because the Binder uses OLE 2, as you change to a page created in a different application, you don't open that application—your tool bar and menus change to fit the data. OLE 2 works much more smoothly in Word95 than in previous versions—but still demands a lot of RAM.

Several years ago, Microsoft promised a single, Visual Basic-based macro language, that would be supported across its applications. While Excel has supported Visual Basic for Applications, Word and PowerPoint still lack that support. Word and Excel continue to use the same file formats with the previous versions, but PowerPoint and Access produce new, incompatible files.

Working Separately

The applications in Office95 benefit from being designed for Windows95, and to share the common features of Office. Otherwise, the actual feature-sets of the separate applications are not dramatically changed from the last generation. That's not a bad thing—Word 6.0 and Excel 5.0 were both rich with features that many users still haven't had a chance to fully get used to.

All applications in the suite now sport a "7.0" version number—even though in some cases, this means jumping a few numbers (Excel 5.0 to 7.0, Access 2.0 to 7.0—Word skipped in the previous generation, from 2.0 to 6.0—now it too, shares the 7.0 moniker).

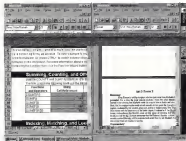
Word 7, for example, builds on the previous version's Auto-features, sometimes feeling like it's become Auto-everything. As before, you can AutoCorrect (now available in all of the Office apps) so that when you type "teh" you get "the". Now you also get auto-bullets. Starting a line with "-" gets you the default bullet symbol. Start with a number, and you get a formatted numbered list. Headers auto-format. A row of dashes becomes an instant border.

Please in your typing, and your spelling can be checked...it seems to work more smoothly than a similar feature in the beta of Lotus's Word Pro that I recently looked at—there, every word typed appeared as a mistake until you finished typing it by pressing the spacebar—a disconcerting changing of colors.

Auto-maths also comes to Excel AutoCorrect, again. But also AutoComplete—like in Quicken or MS Money, start to type in a previously-appearing name in a cell, and it fills in the rest for you. Highlight a bunch of cells, and the total is automatically calculated, and displayed on the bottom of the screen.

New to Excel 7.0 is Data Mapping, a feature that promises to let Lotus's 1-2-3, release 5. Data in a spreadsheet can be translated into a colour-coded map, as easily as into a chart. A basic set of maps is included, with the promise of more from third-party suppliers (a neighborhood map of Vancouver, as yet).

Another steal from Lotus SmartSuite is tighter links between the spreadsheet and the database program, in this case, Excel and Access. Users will have to wait for Access 7.0 to see these in action, however.



I wasn't too impressed with the Windows for Workgroups version of Schedule, preferring Lotus's Organizer as a simple personal information manager (PIM). I haven't seen anything in the Office95 Schedule + that changes that opinion... but if you don't currently use a PIM, it's worth a look; it is more fully-functional than the previous version. As well, it is well integrated into the rest of Office. For example, you can pull names and addresses out of Schedule + into a Word letter. Oh— it also includes a Wizard to work with that Times computer watch.

And I haven't looked at PowerPoint, Office's presentation graphics program— I'm saving it until I can compare it, head to head, with Lotus's new, Win95 version of Presentation Graphics.

Like all of the current sales, Office 95 is a hefty proposition, that can demand a lot of RAM and hard drive space. It can be installed in a minimal fashion, taking a mere 27 megs, or can be set up to run off a CD-ROM drive (which still asks for 39 megs of hard drive space). Microsoft claims a typical installation will require about 55 megs of space—a full install takes 89 megs. If you find yourself regularly opening Word and Excel at the same time, perhaps to drag a spreadsheet chart into a word processing document, you'll be best off with 16 megs of RAM. If you get the CD version, you get the bonus of Microsoft Bookshelf on the disk—a useful collection of reference tools (dictionary, thesaurus, atlas, desk encyclopedia, famous quotations, etc).

Home users and some small offices running Win95 may find their needs better served with one of the new generation of all-in-one programs, such as Microsoft Works-95, or the soon-to-be-released Claris Works 4.0.

Even though the biggest improvements users will find with this suite come from Windows 95 (like long file names) rather than from the core applications, at the moment, this is the product of choice for business users running Win95. Even when Lotus and Novell release their Win95 competitors, in a few months, this will remain the one to beat. ☐

About the author: *Alex Zisweil* can be reached by e-mail: alex_zisweil@compuserve.com



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Frequently Asked Questions

Pentium OverDrive

Information from Intel Corp.

What is a Pentium OverDrive processor?

The Pentium OverDrive processor is the highest performance OverDrive processor available today. It provides a simple, inexpensive performance upgrade for most IntelSX2 and IntelDX2 systems, as well as a superior upgrade option for many Intel486 SX and DX CPU-based systems.

Is the Pentium OverDrive processor really a Pentium processor?

Yes, it is a true Pentium processor. It is based on 3.3 volt, 6 micron Pentium processor technology, the same used by 75 through 130-MHz Pentium processors available today.

In addition to featuring Pentium processor superscalar architecture, enhanced on-chip cache and faster floating point, it offers a 30-bit simulator, an on-package voltage regulator and fan heatsink, and a 5.2 core/bus ratio, that operates the OverDrive processor at five and a half times the speed of the system bus.

How much does the Pentium OverDrive processor cost?

The Pentium OverDrive processor is available in two versions, based on the bus speed of your Intel486 system:

The 63-MHz Pentium OverDrive processor is designed for upgradable 66-MHz IntelDX2 CPU-based systems, as well as upgradable 33-MHz Intel486 SX and DX CPU-based systems. The suggested list price is US\$299.

The 63-MHz Pentium OverDrive Processor is designed for upgradable 50-MHz IntelSX2 and IntelDX2 processors, as well as upgradable 35-MHz Intel486 SX and DX processors. The suggested list price is US\$279.

How do I know it will work with my system?

The Pentium OverDrive processor will upgrade most Intel486 CPU-based systems with a larger 237- or 238-pin socket. For information on whether or not a specific system supports an OverDrive processor, contact your system manufacturer, local computer dealer, reseller or check the Intel OverDrive Processor Upgrade Guide which contains over 5200

system model listings. The Upgrade Guide is available on the WorldWide Web <http://www.intel.com/procs/overdrive>.

How much of a performance increase will be gained with a Pentium OverDrive processor?

In comparing the relative performance of the Pentium OverDrive processor with a 66-MHz IntelDX2 CPU-based system, the Pentium OverDrive processor has an iCOMP index of 561 (iCOMP stands for Intel Comparative Microprocessor Performance Index and reflects the relative performance of Intel microprocessors), representing a 96 percent increase over the 66-MHz IntelDX2 CPU-based system with an iCOMP index of 297.

The Pentium OverDrive processor delivers a substantial performance increase for many of today's applications. For example, an upgradable 66-MHz IntelDX2 CPU-based system will realize more than a 50 percent performance increase across most typical applications like Word for Windows, CorelDRAW, and Quicken for Windows v 3.0.

Will the Pentium OverDrive processor support Windows 95 and new advanced applications?

Yes. The Pentium OverDrive processor will provide a significant performance boost to processor-demanding operating systems like Windows 95, Windows NT, and OS/2 Warp, as well as many emerging communications, multi-

tasking and multimedia applications.

For example, preliminary testing on an Intel486 SX or DX CPU-based system with 8MB RAM demonstrates that the Pentium OverDrive processor accelerates some applications running under Windows 95 by over 200 percent. Similar testing on an IntelDX2 CPU-based system with 8MB RAM shows a 75 percent acceleration.

Will a Pentium OverDrive processor help the performance of games?

Yes. By upgrading the system CPU, keyboard and control responsiveness improves as well as the quality and detail of the graphics. In fact, many of today's games are designed to offer different layers of detail based on the performance of your system's CPU. These games will recognize the system's Pentium OverDrive processor upgrade and automatically turn on key graphic features without sacrificing performance.

Doesn't a memory upgrade make more sense for Windows 95 than an OverDrive Processor upgrade?

Windows 95 and other advanced applications work best with more processing power and memory than previous generations of software. The best upgrade choice depends on your system's present configuration and the types of applications you use.

If your system already has 8MB RAM or more, the Pentium OverDrive processor provides the greatest performance boost. For example, when you upgrade an Intel486 SX or DX CPU-based system that has 8MB RAM with an Pentium OverDrive processor, the system performance gain ranges between 100-200 % as compared to a minimal gain if you just add an additional 8MB RAM.

If your Intel486 system has 4MB RAM, preliminary in-house Windows 95 testing indicates that the best value in performance gain is achieved through the addition of an Intel Pentium OverDrive processor and an additional 4MB RAM, both of which easily fall within a US\$300 budget. □

PEOPLE

Novell gets new VP and GM

Tom Peat, senior VP, Americas Sales for Novell, Inc. announced the appointment of Don Chapman as VP and general manager of Novell Canada Ltd.

Don Chapman has more than 20 years experience in the Canadian high technology industry. As VP of sales and marketing at Renaissance Ltd., he was responsible for their Canada, US, UK and European operations. At IBM Canada Ltd. he held several senior sales and marketing positions.

"Don Chapman's track record as a general manager and his strong knowledge of the channel will be a great asset to Novell Canada," said Peat. "Don has the experience to focus our efforts in providing our customers with the tools they need to communicate - at work, at home, or any place where they need information."

"I believe in Novell's strong technical depth. There is a tremendous opportunity for growth in the networking and applications

markets," said Chapman. "I look forward to working with our channel partners in bringing Novell's industry leading networking operations systems, infrastructure, applications, and information needs products to market."

NEW DEALS

Markham carrying Doewoo monitors

Markham Computer Corporation is distributing nationally a range of 14" to 21" monitors from Doewoo Electronics Canada. Both companies are located in Markham, Ont. Marketing support includes sharp displays and excellent price points and industry leading quality. Markham can be reached at 1-800-462-7432 (MARKHAM).

EMPAC to distribute Samsung monitors

EMPAC has signed an agreement to distribute Samsung's new SyncMaster G1 Series monitors. They also carry the full line



John Jung, President of EMPAC and Albert Kim, President of Samsung Electronics North America

of Samsung monitor products. The SyncMaster features Mag and Play, Ultra-Clear Coating for non-glare, ergonomic design, on screen controls, MPRII compliance and TCO emission guidelines as well as EDA Energy Star compliance. Samsung is the world's largest CRT builder in the world and the G1 monitors have internationally recognized award winning quality manufacturing standards. EMPAC 905-940-1600

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Internal Disk Center	Computer Table
Tray Lock	Office Chair
Base Lockable	Keyhole Stand

I n t e r n e t



Barbara Allen

Why a site on the Internet should be part of your strategic marketing plan

The other day I was wondering what someone would have to do to escape the barrage of information that seems to be escalating daily about the Internet. Go to a remote island? Take vows of silence? The best solution I could come up with might be to retreat to a community where technology is banned.

That is how all pervasive this computer network of over 45,000 computer networks has become, and with good reason. Anything that gives anyone the ability to reach millions around the globe instantly is bound to be revolutionary. Which is why the Internet has been compared to the invention of the printing press. When you consider the sweeping changes Gutenberg's invention initiated, it becomes clear that soon it won't be a question of whether you'll use the Internet for business or not; it will be how soon you get on.

Like other technological innovations that give competitors the upper hand, the Internet will empower those who know how to use it effectively and leave those who don't, far behind.

Another more positive way of looking at it is this: exposure to new information creates change. And, as we know, with change comes opportunity. With 40 million users on the Internet now, 100 million within a year and half a billion by the year 2000, the "Net" offers tremendous opportunities for business. These include:

- Selling products and services
- Test market acceptance of products and services
- Sales promotion
- Obtaining valuable customer information
- Building customer support
- Access to global research and information resources

- Two-way communication with public keys
- Global e-mail and fax via a local phone call

If you are interested in doing business on the "Net," one of the most exciting places to be is the World Wide Web. With over 30,000 sites from the United States and Canada alone, the World Wide Web is the fastest growing area of the Internet thanks to its graphical and hypertext capabilities. Visitors to the Web, who number about five million now, are growing by 25 per cent every month. It is estimated that 22 million will be using the Web by the turn of the century.

Who are all these people?

Demographic information culled from recent studies so far suggests that the majority, 66 per cent, are male while 34 per cent are female—figures that show a definite skewness in female participation over earlier studies. The average age of users are spread pretty evenly across age categories from 15 to 54. Most work for large companies, over half are white collar workers, and over three quarters have a college education and earn over \$65,000 U.S. Roughly a quarter of users say they purchase online, which includes everything from the World Wide Web to America Online, CompuServe, eWorld and Prodigy.

It's a good bet that many of these users are interested in computer equipment and software and related products. It's also likely that they expect to use your business on the World Wide Web—and may be disappointed to know that your gear isn't available in this arena. If you are forward-thinking enough to have put up a "net" or "home page," you have a real opportunity to present yourself in a way that can result in lots

more business.

The problem is, more often than not, that results are very disappointing. You cannot expect to put up a home page, then sit back and wait for the dollars to flow in. It's a seductive thought, but like most new marketing ventures, you'd be wise to invest in some professional help to ensure success. First of all, people must be able to find your site and once they visit, want to return. This means your home page must be registered in the appropriate search engines on the "Net." This is an opportunity in itself to create some great "Net publicity," as many search engines like Yahoo will look over your site and if they like what they see, put you on their Hot List, guaranteeing you traffic.

The competition is becoming fiercer for a spot on the Hot List. And even if that winner's list, you should make sure that your home page is attractive and memorable in some way so that visitors will come back for more. Interactive graphics and writing that is personable, to the point and keeps the reader interested, these are basic elements that create compelling sites. Contests, promotions, games, making use of the interactivity that is intrinsic to the "Net" should be considered when you are planning your site. Contests are very popular on the Web and they allow you to build a loyal customer list—a



valuable list that you can e-mail regularly with reminders and special offers. In other words, you need to approach your presence on the World Wide Web as a professional one.

Once you have a great site, you should discuss supporting your efforts via traditional and "Net" media to make sure that all of your present concerns as well as potential customers know how to find you. And don't overlook the process of creating your own publicity about your Internet site, especially if yours is a "first" in some way. It's not impossible to generate excellent local news coverage, maybe even TV if your angle is worth a story. That kind of "free" publicity can go a long way to getting the word out about your site.

Also, remember even if customers don't order online, they are getting a lot of valuable extra information about products from you in another medium, which may be reflected in your retail sales totals. Putting on Frequently Asked Questions (FAQs) can also save your customer service reps a lot of extra telephone time.

Which brings me to the next point: It's crucial to keep the site new and interesting on a regular basis. Encourage visitors to bookmark, remind them to do so. Create promotions and offer regular tastings about upcoming offers. Always give your visitor a reason to return. Sites that don't change are called "Dead Web Sites!"

As well, if someone e-mails you, make it a priority to e-mail back. This is a key factor in creating a faithful following.

Here's another common accusation—you've invested some money on glossy brochures. Wouldn't it be great to have the world use them? So you hire an ad agency and put those words and pictures online. Sometimes it works. But more often, than not, it doesn't. Viewers may not be interested in wading through all that text. Wouldn't it be more interesting to structure the brochure to give viewers a sense of control over the information they are reading? And also, to identify opportunities within the brochure for interactivity? Take advantage of the possibilities of your new medium!

Linking your site to others which offer resources that are complementary to your products and services is also a proven way to increase traffic. Visitors may use your site as a gateway to reach other sites and as a result, bookmark you. If you can convince other sites to link to yours, then you've automatically extended your reach. Linking to resources is also viewed as an extra service to your customers. For example, in a recent site we created for major Ontario real estate developer, Danforth,

we sorted and found a number of excellent resources that we knew this builder's family-oriented clientele would find worthwhile—kids' compendium sites, financial information including how to buy a new home from major banks, gardening and so on. The goodwill that this generates is priceless.

Creating a memorable site, generating and increasing visitor traffic, building a loyal customer base, taking advantage of rapid technological advances that offer new opportunities, all of these initiatives require the services of multi-skilled professionals. A word of advice—service providers and other technically-oriented specialists do not generally possess marketing, communication or public relations expertise. They are not the best people to create your site and promote it, even if they advertise this as part of their capabilities. Many service providers will create home pages for you, but do not like that part of the business. It is simply not what they do best.

It is not simply a question of hiring a graphic artist and making your site look interesting—another common misperception. It's important to make sure your site is designed from a marketing perspective from beginning to end.

What you will need are the services, either in-house or on a consulting basis, of a marketing expert who also understands the capabilities of the Internet as a new medium and who can work knowledgeably with technical experts.

Think about putting the same thinking and importance on your Internet presence as you would devote to your advertising campaign and you will reap the same benefits! ☐

About the author: Barbara Allen is an award-winning corporate communicator and PR consultant who co-founded Arjiv Allen & Associates Inc. Her creative thinking skills and Internet expertise have helped create responsible effective World Wide Web sites. She can be reached by e-mail: allenbarb@infoquest.net

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INTERVIEW

Good CD-ROM producers wear many hats

By Philip Hyman

If you're familiar with PCs, you're probably aware of the phenomenal impact which CD-ROM technology is making today on the computer field. A CD-ROM looks exactly like an audio CD, but the similarity stops there. A CD-ROM can store not only audio, but also video, computer data, photographs and animation. This makes CD-ROMs ideal for multimedia programs. One can acquire a CD-ROM drive today for about \$150.00. The past year has seen an incredible number of CD-ROM titles launched in the international marketplace, everything from games and educational to productivity and training. Taking the above into consideration, we must also realize that the single, most important factor in all of the changes taking place today in the realm of computer technology, is undoubtedly the human one.

Remarkably, there is a serious shortage of multimedia producers to meet the demands imposed by new technological developments. In an era of changing economies and revolutionary technologies, the profession of CD-ROM Producer, like no other, epitomizes the skills and "knowledge worker" talents required to successfully create and compete in this new era of cyber-business and global marketing. Yet, there are still very few multimedia producers active in this remarkable and cutting-edge field. I interviewed, Claudio Buscetti of Multiforum Inc., one of Canada's foremost interactive multimedia producers to find out why, but also to find out what the future may hold for all of us.

CCW: Claudio, the words "interactive" and "multimedia" are being used so frequently today. I wonder if people really are aware of what these terms mean? Could you define what a multimedia or CD-ROM producer is?

Claudio Buscetti: Well, a multimedia producer is an individual that is competent in a wide variety of different technologies and art forms, a person who is able to combine many forms of technology and art into a cohesive final product, such as an interactive CD-ROM

CCW: Why are multimedia producers in such demand today?

Claudio: First of all, because of the recent boom in computer hardware and powerful game plat-

forms, CD-ROM drives, optical cables and so on. Since it is really a position which only developed in the past few years due to the advent of interactive technology, it is extremely



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INTERVIEW

difficult to find people who have experience as multimedia producers. There are individuals with experience in the various fields which multimedia incorporates, but usually, they are only qualified in one or two of the disciplines required to produce a successful multimedia product. So you see, it is hard to find that special someone with experience in the wide variety of fields which multimedia encompasses.

CCW: How did you get started?

Cludio: My background includes program mg, creative direction and marketing. In 1985, I joined forces with my father, and about four years ago had the opportunity to move Microform into multimedia production. At that time it was a gamble but it paid off. Right now, Microform is the largest producer of CD-ROM products in Canada. A few years back, if someone had told me that I was going to end up with one of the toughest jobs in the world...well...I wouldn't have believed that.

person. I have produced over 30 CD-ROMs from games to educational products and every project gets harder instead of easier. The fact is that the technology has expanded the creative processes, and in order to realize a high-quality CD-ROM product, the multimedia producer must have the experience in the required fields for product creation.

CCW: Why is it so difficult to be a multimedia producer?

Cludio: First of all, let me explain a bit about interactive multimedia technology. With a CD-ROM product, you are able to interact with a variety of different technologies such as Video, Animation, Graphics, Programming, and Sound. It takes an exceptional individual to keep up with such different technology in order to get the most from it. For example, only a few years ago you could only play a small size video clip on your computer. Today, you can play full-size video. In fact the new fast-action game we are about to launch, "Expect No Mercy", is using technology that did not exist six months ago. The technology is just changing too fast. It's so hard to keep up with it! So, you see, these things make the job of multimedia producer quite demanding.

CCW: Then, what does it take to be able to produce a good interactive, multimedia product?

Cludio: The multimedia producer must be able to perform a wide variety of functions. He or she must be a writer, a video producer, an animation director, a creative director, a project manager and a marketing specialist. In name a few! But please don't get me wrong, I wouldn't want to discourage any future multimedia producers reading this. All of the skills I mentioned can be acquired over time and with experience, or the necessary talent can be hired if budgets permit. The important ingredients required to succeed as a multimedia producer are drive and creativity, as well as the ability to really enjoy learning and working with new technology.

CCW: Do you actually fulfill all those functions you mentioned?

Cludio: Not anymore. Right now I have a team of more than forty talented people who help me to produce our CD-ROM products. But when I started, I basically had to do everything myself! However, I still apply the skills I acquired through the years, to everyday

situations which arise here at Microform.

CCW: How much money is required to produce a multimedia product?

Cludio: I have produced products for as little as \$5,000 and as much as \$1 million. Obviously the more money you have, the better chances you have for the product to succeed. But there are ways to produce a CD-ROM economically and still make it a success. The majority of money is usually directed to marketing. Therefore, one way to save money is to form a strategic partnership with a company which can handle distribution. For example, right now we save money on our products by distributing them ourselves in more than 50 countries. We often are approached by smaller multimedia producers to help them market their products.

CCW: What will the future bring for multimedia production?

Cludio: I am convinced that the future of CD-ROM and multimedia production will be as great as the future film business. Every year the budgets on interactive multimedia production are shooting up and I definitely see a lot of job opportunities materializing in this field in the near future. Microform is always looking for talented CD-ROM producers. ☐

About the author: **Philip Byrnes** is a freelance communications consultant and writer living in Toronto.

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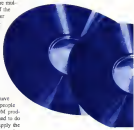


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